Amendments to the Claims:

1. (previously amended) A method of generating a start of packet synchronization sequence for use in a transmitter, said method comprising the steps of:

generating a plurality of N symbols to be transmitted in said synchronization sequence, wherein N is a positive integer;

generating N-1 predetermined signals, chosen to maximize autocorrelation properties of said synchronization sequence, wherein said N-1 predetermined signals convey packet type information to a receiver;

inserting one of said N-1 predetermined signals after each of the first N-1 symbols in said synchronization sequence;

encoding said synchronization sequence; and

transmitting said encoded synchronization sequence into a channel.

2. (original) The method according to claim 1, wherein said predetermined signals comprise time delays or transmitting gaps.

3. (original) The method according to claim 1, wherein N equals seven.

4. (cancelled)

5. (currently amended) The method according to claim 1, further comprising generating a plurality of synchronization sequences wherein each synchronization sequence corresponds to a unique set of N-1 predetermined signals comprising time delays, each set of N-1 time delays chosen so as to minimize [[the]] cross correlation between synchronization sequences.

6. (original) The method according to claim 1, further comprising generating a plurality of synchronization sequences wherein each synchronization sequence corresponds to a different packet type.

7. (original) The method according to claim 1, wherein said each symbol comprises a zero shifted code shift keying modulated symbol.

8. (cancelled)

9. (cancelled)

10. (currently amended) A method of generating a start of packet synchronization sequence for use in a code shift keying (CSK) based transmitter, said method comprising the steps of:

generating a plurality of symbols of known shift rotation to be transmitted in said synchronization sequence;

inserting a respective predetermined time delay between each of said symbols;

encoding said synchronization sequence;

transmitting said encoded synchronization sequence onto a channel; and

wherein said respective predetermined time delays inserted between said symbols are adapted to convey packet type information to a receiver.

11. (original) The method according to claim 10, wherein said predetermined time delays are chosen to yield a synchronization sequence having relatively high auto correlation properties.

12. (cancelled)

13. (currently amended) A transmitter for use in a spread spectrum communications system, comprising:

a synchronization sequence generator adapted to generate a synchronization sequence, said synchronization sequence representing a plurality of synchronization symbols with predetermined time delays inserted therebetween;

an encoder adapted to determine [[a]] shift ~~index~~ indices to be applied to [[a]] spreading ~~waveform~~ waveforms, said shift index determined based on said synchronization sequence;

a spreading waveform generator adapted to generate [[a]] spreading waveform ~~signal~~ signals in accordance with said shift index; and

wherein delays between spreading waveform signals are determined by said predetermined time delays in said synchronization sequence.

14. (original) The transmitter according to claim 13, further comprising a synchronization sequence gap memory adapted to store a plurality of synchronization sequences,

each synchronization sequence comprising a set of symbols with predefined time delays between each of said symbols.

15. (original) The transmitter according to claim 13, implemented in an Application Specific Integrated Circuit (ASIC).

16. (original) The transmitter according to claim 13, implemented in a Field Programmable Gate Array (FPGA).

17. (currently amended) A communications station for transmitting and receiving signals to and from other stations connected over a shared communications media based network, comprising:

a coupling circuit for generating a receive signal received over said network and for outputting a transmit signal onto said network;

a transmitter adapted to modulate a synchronization sequence and data to be transmitted in accordance with a modulation scheme so as to generate said transmit signal therefrom, wherein said transmitter comprises means for generating a plurality of symbols of known shift rotation to be transmitted in said synchronization sequence and means for inserting [[a]] predetermined time ~~delay~~ delays between ~~each of~~ said symbols, wherein said time delays associated with a synchronization sequence selected to be orthogonal to those of other synchronization sequences;

a receiver adapted to demodulate said receive signal in accordance with said modulation scheme so as to generate a receive data signal therefrom;

a media access control (MAC) circuit adapted to interface an application processor to said shared communications media; and

said application processor adapted to control the operation of said transmitter, receiver and MAC and to provide an interface between said MAC and an external host.

18. (currently amended) The communications station according to claim 17, wherein said ~~first signal~~ synchronization sequence comprises a series of time delays in accordance with a synchronization sequence gap template.

19. (original) The communications station according to claim 17, further comprising a synchronization sequence gap memory adapted to store a plurality of synchronization sequences, each synchronization sequence comprising a set of symbols with predefined time delays between each of said symbols.

20. (original) The communications station according to claim 17, wherein said modulation scheme comprises code shift keying (CSK) modulation.

21. (original) The communications station according to claim 17, wherein said transmitter and receiver are implemented in an Application Specific Integrated Circuit (ASIC).

22. (original) The communications station according to claim 17, wherein said transmitter and receiver are implemented in a Field Programmable Gate Array (FPGA).

23. (new) A method of generating a start of packet synchronization sequence, said method comprising the steps of:

generating a plurality of symbols to be transmitted in said synchronization sequence;

inserting specific time delays between said plurality of symbols in said synchronization sequence, said time delays associated with a synchronization sequence selected to be substantially orthogonal to those of other synchronization sequences; and

transmitting said synchronization sequence onto a channel.

24. (new) The method according to claim 23, wherein said specific time delays are adapted to convey information.

25. (new) The method according to claim 23, wherein said specific time delays are adapted to convey packet type.

26. (new) The method according to claim 23, wherein said synchronization sequence comprises seven symbols having respective time delays of [10, 6, 12, 9, 8, 5] therebetween.

27. (new) The method according to claim 23, wherein said synchronization sequence comprises seven symbols having respective time delays of [4, 5, 14, 12, 11, 9] therebetween.

28. (new) The method according to claim 23, wherein said synchronization sequence comprises seven symbols having respective time delays of [6, 4, 11, 13, 5, 10] therebetween.

29. (new) The method according to claim 23, wherein said synchronization sequence comprises seven symbols having respective time delays of [8, 7, 4, 9, 5, 11] therebetween.

30. (new) The method according to claim 23, wherein said synchronization sequence comprises seven symbols having respective time delays of [11, 5, 7, 9, 6, 6] therebetween.

31. (new) A method of generating a start of packet synchronization sequence, said method comprising the steps of:

generating a plurality of symbols to be transmitted in said synchronization sequence;

inserting specific time delays between said plurality of symbols in said synchronization sequence, said time delays chosen to yield both a high autocorrelation function for a respective synchronization sequence and a low cross-correlation function for each pair of synchronization sequences; and

transmitting said synchronization sequence onto a channel.

32. (new) The method according to claim 31, wherein said specific time delays are adapted to convey information.

33. (new) The method according to claim 31, wherein said specific time delays are adapted to convey packet type.

34. (new) The method according to claim 31, wherein said synchronization sequence comprises seven symbols having respective time delays of [10, 6, 12, 9, 8, 5] therebetween.

35. (new) The method according to claim 31, wherein said synchronization sequence comprises seven symbols having respective time delays of [4, 5, 14, 12, 11, 9] therebetween.

36. (new) The method according to claim 31, wherein said synchronization sequence comprises seven symbols having respective time delays of [6, 4, 11, 13, 5, 10] therebetween.

37. (new) The method according to claim 31, wherein said synchronization sequence comprises seven symbols having respective time delays of [8, 7, 4, 9, 5, 11] therebetween.

38. (new) The method according to claim 31, wherein said synchronization sequence comprises seven symbols having respective time delays of [11, 5, 7, 9, 6, 6] therebetween.